Virginia ForestRIM User's Guide Introduction

Welcome to the Virginia Department of Forestry's Virginia Forest Resource Information Mapper (ForestRIM). Our goal in sharing ForestRIM is to demonstrate the importance of the forest resources, educate citizens about wildfire in Virginia and provide citizens with tools and information to make better-informed decisions.

This User's Guide is provided as a comprehensive reference document, and is designed to help you navigate the mapping application, including instruction on how to access map layers and add your own features. Detailed information about each map layer is available as a link from within ForestRIM, as described in the section about Layers.

ForestRIM is a web-based interactive mapping program built using ESRI ArcIMS technology. It was designed and is maintained by the Virginia Department of Forestry. Development was made possible thanks to grants from the Potomac Watershed Partnership and the USDA Forest Service National Fire Plan.

Questions and comments regarding the mapping application should be directed to ForestRIM@dof.state.va.us.

Virginia ForestRIM Home Page

The ForestRIM Home Page (www.ForestRIM.org) contains links to general information, to the mapping application itself, and to this User's Guide via the "**About ForestRIM**", "**Enter ForestRIM**", and "**User's Guide**" buttons, respectively. The page also has a link to our contact email address in case you have questions or comments about ForestRIM. The "**System Requirements"** link at the bottom-right of the page details the minimum requirements for your computer system and the optional configurations that can help ForestRIM run more efficiently.

If at any time you want to access the Virginia Department of Forestry (VDOF) Home Page, please click on the VDOF shield icon on the page. Similarly, if you are interested in obtaining more information about the organizations that helped make ForestRIM through grant funding, please click on their organization icons.

About ForestRIM

What is ForestRIM?

The Virginia Forest Resource Information Mapper, or ForestRIM, is a web-based interactive mapping tool that allows users to view over 100 map layers, including forest resource information, aerial photos and topographic maps. It was developed originally for Virginia Department of Forestry's staff to address their information needs; however, by making ForestRIM available to the public, Virginia Department of Forestry seizes an opportunity to share information and tools with citizens interested in wildfire and the Commonwealth's forest resources in general.

What makes ForestRIM unique from most other Internet mapping applications is that it allows users to create and save their own map features, like point symbols, lines and polygons. Once a map has been composed, users can print it or save it for later manipulations. Users can also measure distances and areas from the map window, as well as query most of the map layers.

How do I access ForestRIM?

You can access ForestRIM by visiting http://www.ForestRIM.org. Click on "Enter ForestRIM" when you are ready to start using the mapping application. During your first visit, you will be asked to create an account, which will be used to manage ForestRIM only and will not be shared with any outside parties. Please use the Username and Password established during this session to re-enter ForestRIM when you return. *If your account is inactive for more than 60 days it will be deleted and you will have to create a new account*.

Who created ForestRIM?

The Virginia Forest Resource Information Mapper, or ForestRIM, was designed and implemented by the Virginia Department of Forestry (VDOF). VDOF hired TerraLogic, Inc. (http://www.gislogic.com) based in Staunton, VA to perform the application development and hosting. Major funding was made possible by the Potomac Watershed Partnership and the USDA Forest Service National Fire Plan.

Contact Information

ForestRIM is copyrighted by the Virginia Department of Forestry, 900 Natural Resources Drive, Charlottesville, VA 22911. For questions or comments, please send email to ForestRIM@dof.state.va.us.

Disclaimer

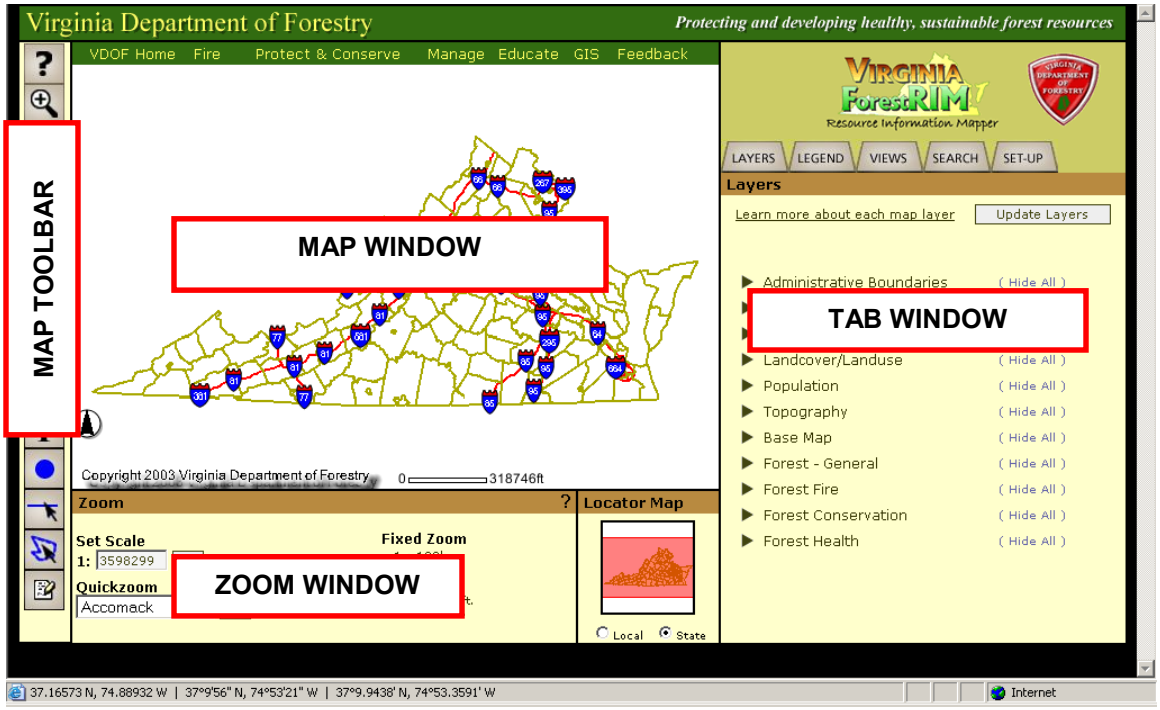
While Virginia Department of Forestry (VDOF) has made every effort to provide accurate and complete information, map layers were gathered from a variety of sources and may not always be up-to-date. Attribute and positional accuracies vary greatly given the wide variety of data sources. This information is provided with the understanding that it is not guaranteed to be correct or complete and conclusions drawn from such information are the sole responsibility of the user. VDOF does not assume liability for any damages caused by inaccuracies in these data or documentation, or as a result of the failure of the data or software to function in a particular manner. VDOF makes no warranty, express or implied, as to the accuracy, completeness, or utility of this information, nor does the fact of distribution constitute a warranty.

ForestRIM Environment

ForestRIM has several windows that make up its layout. There is a main Map Window where you will see the map layers. This window is surrounded by other elements that give you access to tools and information. The following chapters will cover these in more depth, but generally speaking, the Map Tools toolbar on the left and the Zoom and Locator Map windows along the bottom will remain static throughout your session. The display inside the Tab Window on the right is the main "work area" and will change depending on which Tab you choose, or whenever you use tools like the Map Annotation, Measure Tool, etc.

NOTE: When the cursor is in the Map Window, its latitude and longitude are displayed at the bottom of the browser window. Lat/Lon is displayed in three formats:

Decimal Degrees | Degrees Minutes Seconds | Degrees Decimal Minutes



Using ForestRIM

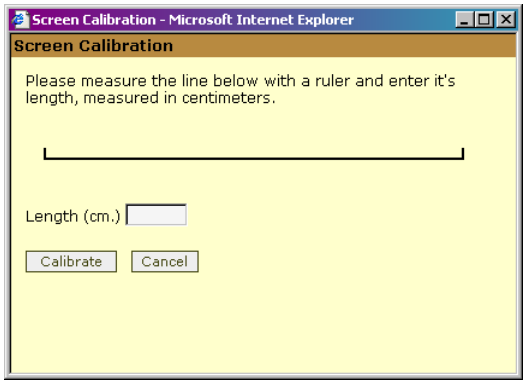
Setting Up ForestRIM for your Computer

ForestRIM has a Tab set aside for you to calibrate the application to your monitor size, and to customize the desired level of compression you want to use to receive the map images.

Because monitors vary (in size, resolution, etc.), the screen calibration ensures that scales and measurements are accurate relative to your particular screen. Note: ForestRIM displays best with minimum screen size of 17 inches and monitor resolution set to 1024 x 768. You can still use ForestRIM with other sizes and settings, but you may need to scroll the window to access the parts of the screen.

ForestRIM uses compression software called AirZip Accelerator, which allows you to sacrifice image quality for download speed. At any time during your ForestRIM session you can alter the speed with which you receive the image, giving you maximum flexibility. AirZip Accelerator is very good at preserving quality for vector data and USGS topo quads. The map image will suffer most with layers like Hillshade and aerial photos.

Calibrating ForestRIM to your Screen



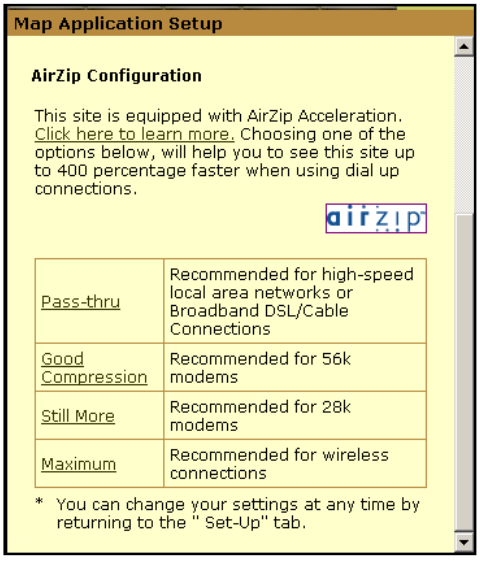
1) Click on the **Setup** Tab from the ForestRIM Tab Window at the right.

2) Click **Calibrate**.

3) A pop-up window will appear. Take a ruler with centimeter divisions and measure the length of the line. Type this number into the **Length** box.

4) Click the Calibrate button.

Using AirZip Accelerator



1) To use this optional function you must download the plug-in from the System Requirements page, which you can access from www.ForestRIM.org.

2) Click the **Setup** Tab from the ForestRIM Tab Window at the right.

3) Scroll down to the AirZip Configuration. If you want to learn more about this technology click the text that reads, **Click here to learn more**.

4) When you first begin, the default is for ForestRIM to deliver the maps without any compression (or acceleration), which is the **Pass-thru** option. If and when you want to see the map un-degraded, click **Pass-thru**.

5) To receive the image at the lowest level of acceleration, click **Good Compression** for 56k modems, or click **Still More** for

added acceleration on slower modems.

6) If you want maximum speed and are willing to sacrifice image quality, click **Maximum**.

Map Layers in ForestRIM

Turning Layers On and Off

1) Click the **Layers** Tab from the ForestRIM Tab Window.

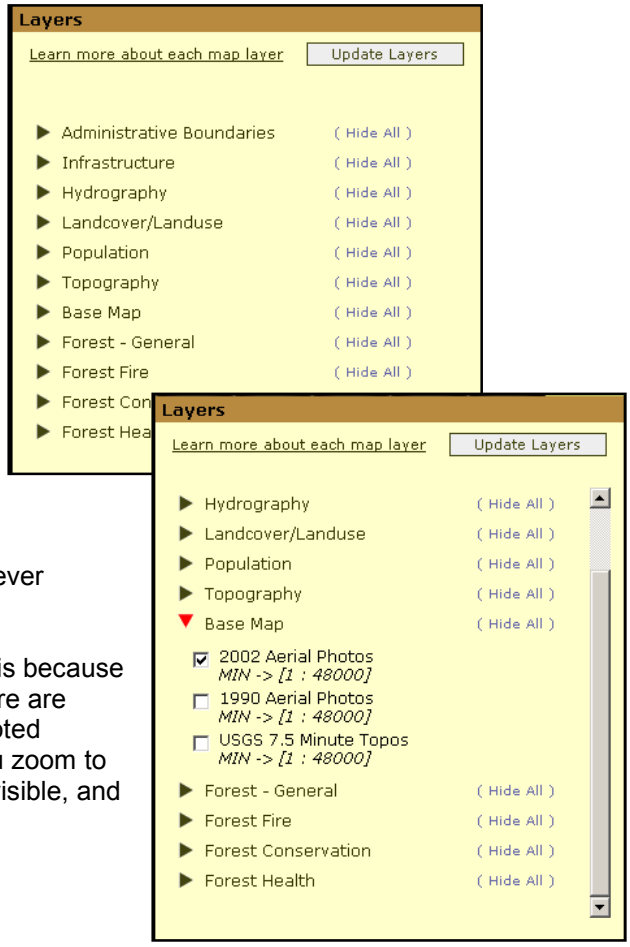
2) Click on **Base Map** or one of the other categories to "open" the category and see the layers available under that heading.

3) Click the check box next to the layer (or layers) to either turn them on or off (make visible or invisible). Whenever you are ready to see layer changes in the Map Window, click the **Update Layers** button near the top of the Tab Window.

4) If you want to turn off all layers within a category, you can simply click **Hide All** next to that category heading.

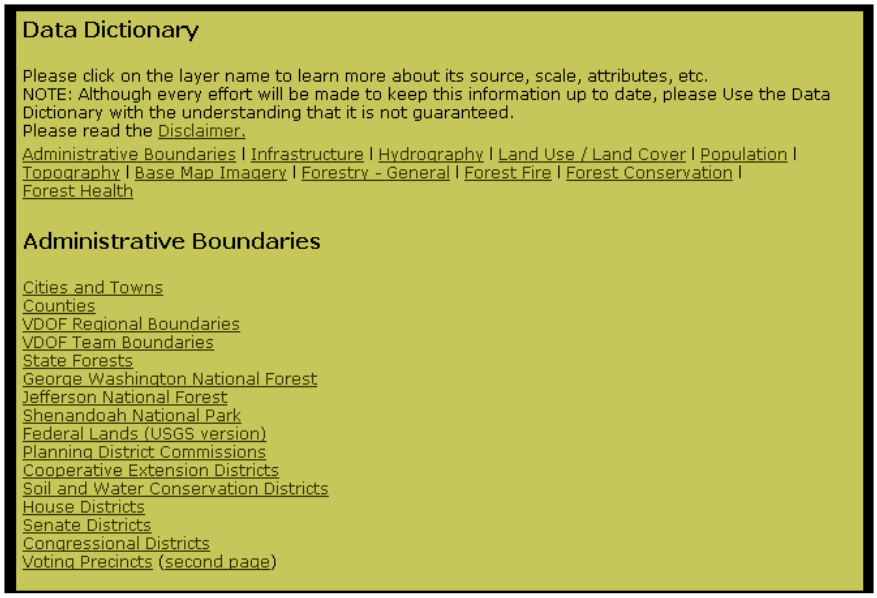
5) To close the category, click on **Base Map** (or whichever category you chose) again.

6) Some layers will appear to be "grayed-out" and this is because they are not visible at the current zoom scale. If there are minimum and/or maximum zoom scales, they are noted underneath the layer name. For example, when you zoom to a scale below 1:48k, Base Map layers will become visible, and the layer in the list will no longer be "grayed-out".



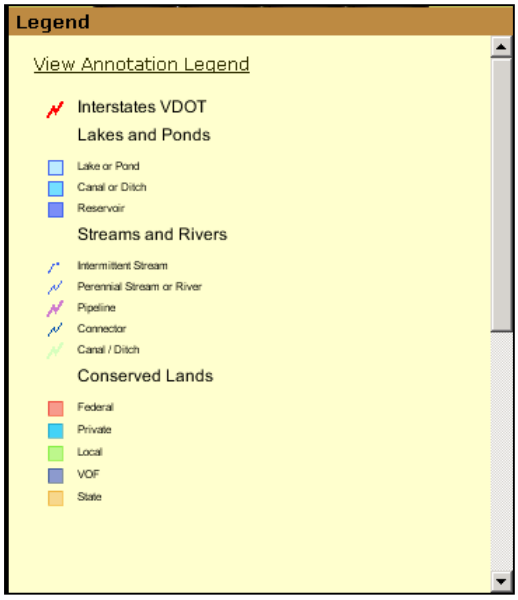
Accessing Information (Data Dictionary) about each layer

1) To find out information about any layer in ForestRIM, such as who created it, when it was created, what the intended scale of use is, etc., click the link "Learn more about each map layer".
2) A separate window will appear with links to each layer.



Map Legend in ForestRIM

The Legend Tab stores the Legend (or symbology key) for each visible layer. This allows you to decipher what the features in the map represent. Legend items for ForestRIM layers are available in a separate window from your Map Annotation symbology, but you can easily toggle between the two.



Using the Legend

1) Click on the **Legend** Tab from the ForestRIM Tab Window.

2) To view the Annotation Legend, click on **View Annotation Legend** from the Layer Legend window.

3) To return to the Layer Legend view, click **View Layer Legend**.

Map Tools in ForestRIM

ForestRIM has various tools to help you navigate to your location of interest, get information from the layers, measure distances, clear selected items, print your maps, and get help. These Map Tools are located along the left side of the ForestRIM screen.

Using Map Tools

1) Whenever you have a question and need a quick reminder of what a function is or does, click the **Help** tool and locate the information. A pop-up window will appear with a list of Help items for ForestRIM.

2) Click the **Zoom In** tool once and then bring your cursor into the Map Window. Click and drag a box around the area you want to zoom in to, and then let go of the mouse button. The Map Window will refresh with the new map showing where you zoomed in.

3) Click the **Zoom Out** tool once and then click once in the Map Window at the point in the map you would like as the center of your map once ForestRIM zooms out. The Map Window will refresh showing the result of your Zoom Out request.

4) Click on the **Zoom to Full Extent** tool. This will automatically zoom the map to the full extent of Virginia.

5) To maintain the same zoom scale and move the map extent, click the **Re-Center** tool and then click the point in the Map Window that signifies the new map center. (ForestRIM does not use a traditional "pan" function for the benefit of modem users.)

6) To get information about a particular map feature, click on the **Identify** tool and then click on that feature in the map window. This tool will return information on all features at that point within the visible and searchable layers. It will **not** return information about layers with no tabular data. These include:

- Railroads, Powerlines, Bridges, Tunnels
- High and Medium Population Density (1990, 2000)
- Shorelines, Bay and Ocean, Riverways
- Raster layers: USGS Topo Quads, Aerial Photos, Hillshade, Slope, 1992 National Land Cover Dataset

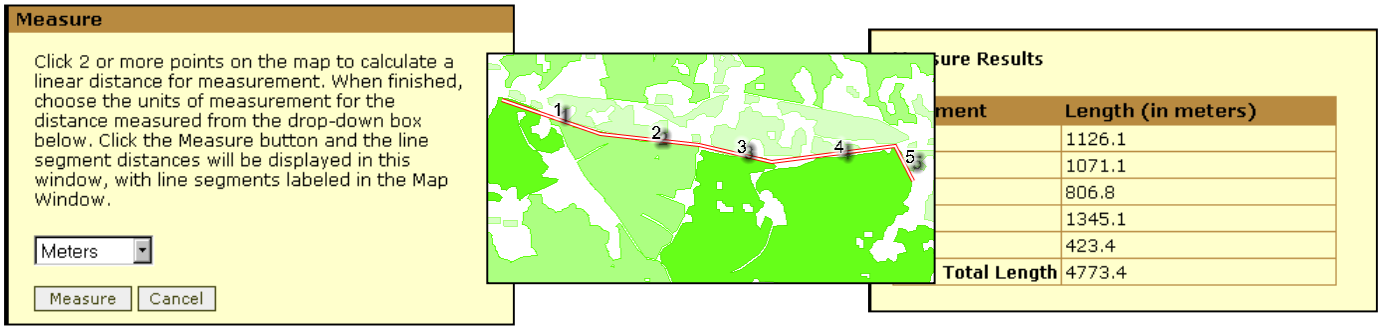
A pop-up window will appear showing the results of any features found using the **Identify** tool. You have several options with regard to what to do with the search results. You can zoom to the records, view the records in detail, download them, or use them as the basis for a new search. Please refer to the section on **Spatial Search** for information on using your search results.

7) To determine distances on the map, click the **Measure** tool. Next move the cursor into the Map Window and click at least two points to create a line.

After you click you first point, instructions will appear in the Tab Window. You can continue to click to create multiple line segments to form a more complex line.

When finished drawing the lines for which you want distance measured, choose the measurement units you want the results displayed in from the drop-down box.

Click the **Measure** button to see the distance measurements of you line segment(s) displayed in the Tab Window, and the line segments will be labeled and displayed in the Map Window.



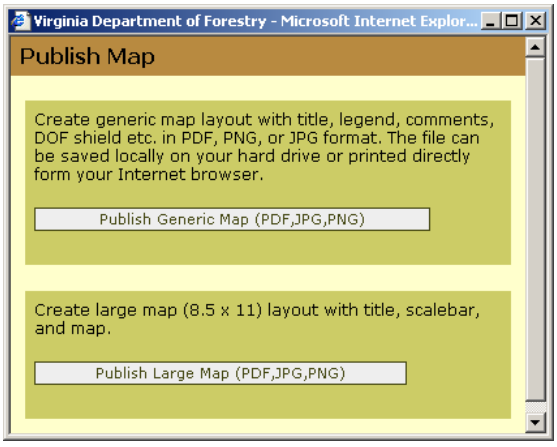
NOTE: To improve the accuracy of these measurements, make sure you have followed the instructions for calibrating your monitor screen outlined in the **Setup** section.

8) Whenever you perform a measurement, or find items using the ID tool (or other query functions) ForestRIM will highlight these things on the map. To clear their selection, click on the **Clear Selection** tool.

Publishing your map

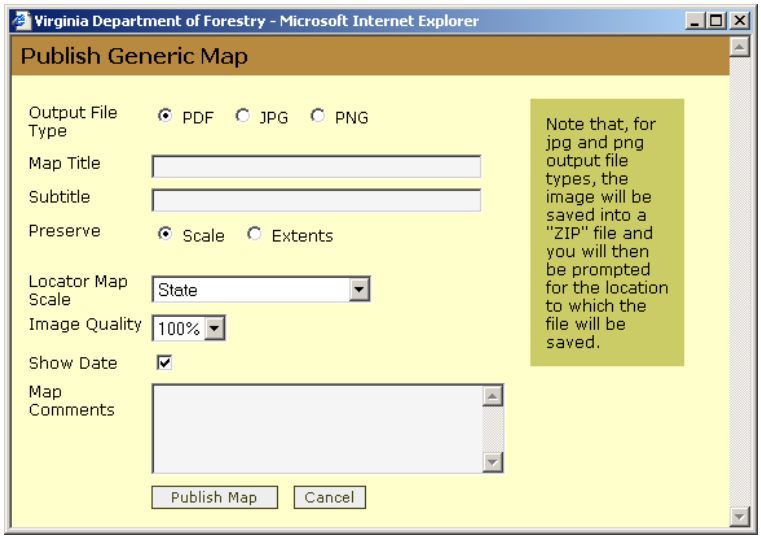
9) Once you have chosen the layers you want to display in your map, zoomed to the desired scale and extent, and have added your own annotation (see section below on Adding Map Annotation) you can print, or publish, your map by clicking the **Print** tool. A pop-up **Publish Map** window will appear with the choices for creating a map that you can save or print. The first map choice will create a map with a map template and various basic map elements. The second lets you print your map to a full 8.5 x 11 page.

a) Click the **Publish Generic Map** button to put the image you created in ForestRIM's Map Window into a map template with map title, subtitle, VDOF shield, scale bar, north arrow, legend, locator map, and date.



b) The first pop-up window will be replaced by another window prompting you to choose various map elements. First click on the **Output File Type** you want your map to be. The **PDF** is the default and your best choice when you want the best output quality and smallest file size. You will need a copy of the Adobe Acrobat Reader, which is available as a free download from Adobe's website (http://www.adobe.com/). **JPG** and **PNG** images can be produced as well, and will be produced as zip files and you will be asked where you want to save them on your computer.

c) Enter optional **Map Title**, **Subtitle**, and **Map Comments**. Choose either to **Preserve** the map window extents or map window scale. Choose a map scale for the **Locator Map** that will be included on your output map, or choose to have none at all from the drop-down box. You can choose to decrease the **Image Quality*** to save time; by default it is set to 100%. By default the **Date** will be printed on the map; you can turn this off by "un-checking" the box. Click **Publish Map** to create your output image.



**NOTE: if you chose to use AirZip to accelerate (and thus degrade) you map image, it will not affect the image quality during map publishing. Therefore, if you choose Maximum acceleration and then 100% image quality when printing, you will get 100% image quality.*

d) A **warning message** appears to inform you that map generation may take some time, and that you should not close the "print window" because that will cancel the request.

e) If you chose PDF, Adobe Acrobat Reader (provided you have it installed) will automatically launch with the map. You can save, print, or close the window to discard the map. If you chose PNG or JPG, a window will prompt you where to save the file on your computer.

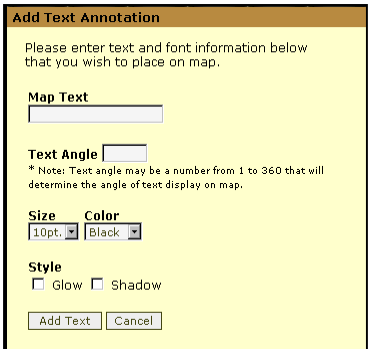
f) Alternatively, to create an 8.5 x 11 (landscape) map with limited map elements, click the **Publish Large Map** button after clicking the **Print** tool from the ForestRIM Map Toolbar. Follow the instructions (similar to above) to produce the map.

Adding Map Annotation

ForestRIM allows you to add your own annotation over the GIS layers in the map window. Annotations can be text, points (symbols), lines, and polygon areas. For each of these annotations, ForestRIM allows you to choose color and other style elements to use in drawing your annotation. Your annotations will be saved so you can turn them on or off (like other GIS layers), change their symbology, zoom to them, or delete them.

10) To add a text annotation click on the **Add Text** tool. Move your cursor into your Map Window and click to signify the place you want your text to be anchored.

Type the text you want added to the Map Window into the **Map Text** box.



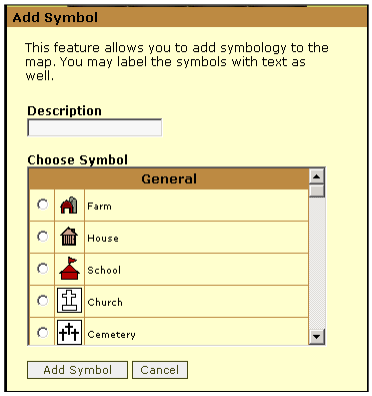
Choose a **Text Angle** (if you enter no angle text will be displayed horizontally).

Choose the **Size** and **Color** you want the text to be from the respective drop-down lists.

You can optionally choose to have the text **Glow** or have it appear with a **Shadow**. Click the boxes next to these options if you want your text to have either (or both) of these effects.

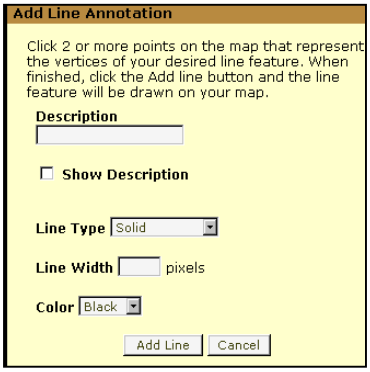
Click **Add Text** button to see your text appear in the Map Window, or alternatively, click Cancel to abandon your text addition.

11) To add a point symbol annotation click on the **Add Symbol** tool.



Once you have selected this tool, move your cursor into your Map Window and click to indicate the place you want your point symbol to be. Instructions will appear in the Tab Window.

When the Add Symbol window appears in the Tab Window as shown below, optionally type a **Description** into the box. Choose a symbol from the list by clicking the button to its left (scroll down to find complete list). Click the **Add Symbol** button to see your symbol appear in the Map Window. Alternatively, click **Cancel**.



12) To add a line annotation click on the **Add Line** tool. Instructions will appear in the Tab Window. Click at least 2 points in your Map Window, one at each vertex of the line you want to draw.

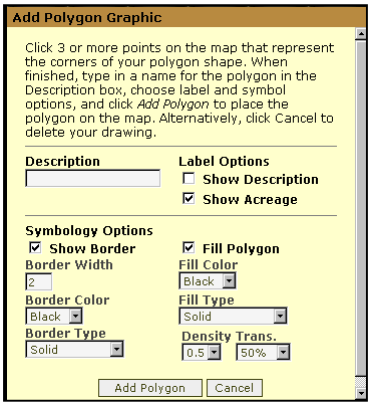
Type in a name for your line feature in the **Description** box. *Note: this name will be used to keep track of the line, so avoid using the same name for more than one line to avoid confusion.*

If you want the name shown on the map, click **Show Description**. From the drop-down **Line Type** list, choose the type of line style you want your line to be on the map. At the **Line Width** box, type the width, in pixels, you want your line to be. From the **Color** drop-down list, choose what color you want your line to be. Click the **Add Line** button to add the line to your map, or click the **Cancel** button to discard.

13) To add a polygon annotation click on the **Add Polygon** tool.

Once you have selected this tool, move your cursor into your Map Window and draw the polygon by clicking along the perimeter (corners) of your desired area. You will need to click at least three corners to draw a polygon, however, after the first click, instructions will appear at right to guide you through the process.

When you have finished clicking the points that make up your polygon, type in a name for the polygon in the **Description** box.



Note: this name will be used to keep track of the polygon, so avoid using the same name for more than one polygon.

If you want to include the description you just entered as a label on the map, click the **Show Description** box. If you want the polygon's acreage displayed, make sure the **Show Acreage** box is checked (un-check it if you do not want acreage displayed).

Next choose whether you want your polygon to have an outline, or border. The default is to have one, but ForestRIM will draw your polygon without a border if you un-check the **Show Border** box. If using, type in a border width and choose border color and type from the drop-down boxes. Next choose whether you want your polygon to be hollow or filled in with color or patterns. If you want a hollow polygon, un-check the **Fill Polygon** box. If using, choose a fill color and type. Choose the density of your fill pattern, and choose the transparency (between 0 and 100%). Click **Add Polygon** to add your shape to the map, or click **Cancel** to undo your addition.

Editing Map Annotation

14) Once you have added map annotations to your map you have the option of changing the symbology, hiding it for later use, zooming to it, or deleting it. To perform any of these edits at any time, click the **Edit Annotation Tool**.

The Tab Window will display the annotations you have drawn, categorized by Type.

For each item there is a check box that indicates if the annotation is visible or not (check means it is visible, no check means it is not visible).

Click the magnifying glass next to an annotation feature and ForestRIM will zoom the map to the extent of that annotation.

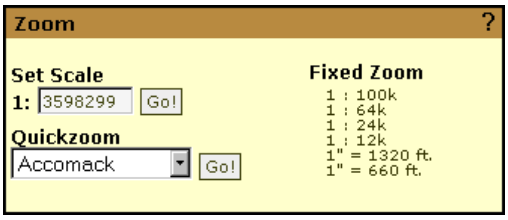
Click the red X icon if you want to permanently delete the annotation feature (an additional warning pop-up window will ask you to confirm that you want to delete the item).

Click the note-page icon to access the symbology page. This is where you can change any of the symbology attributes for that annotation.

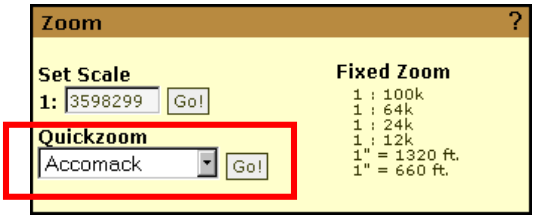
The edit symbology pages will vary depending on whether you are altering a point, line, polygon or text. However, they are almost identical to the pages where you initially chose symbology. Click the **Update Polygon** button (or **Update Line**, **Point**, **Text**, etc.) to make the symbology changes.

Additional Zoom Functions

ForestRIM offers multiple ways of navigating to your place of interest. The Zoom window at the bottom of the ForestRIM application includes tools for you to 1) zoom using an absolute scale, 2) zoom using a set of predefined scales, or 3) zoom to the extent of a county.



Using Quick Zoom



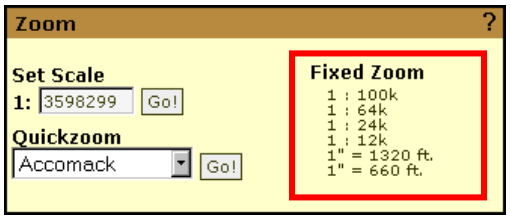
1) Choose the county or city you want to zoom to from the drop-down list.

2) Click the **Go!** button.

3) ForestRIM will zoom to your requested county or city in the Map Window.

Using Fixed Zoom

1) Click the desired zoom level from the **Fixed Zoom** list in the Zoom Window.



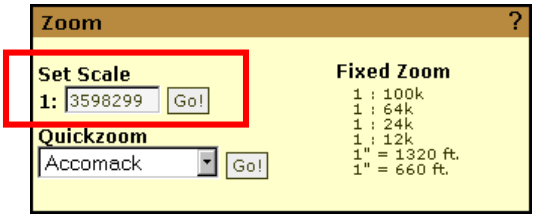
2) Using the center point of your initial map extent, ForestRIM will zoom into (or out to) your requested zoom level.

3) The list below describes how much area is shown in the Map Window at each of the zoom scales in the Fixed Zoom list.

Zoom Level	Approximate "Footprint" on ground represented in Map Window
1:100k	74,000 acres
1:64k	30,300 acres
1:24k	4,200 acres
1:12k	1,050 acres
1" = 1320'	1,850 acres
1" = 660'	465 acres

Using Set Scale

1) You can choose any scale you want by using the Set Scale function in the Zoom Window. Set Scale uses what is called *"absolute scale"* where a ratio, like 1:24,000 means that 1 measurement unit on the map equals 24,000 measurement units on the ground (e.g. 1 inch on the map = 24,000 inches on the ground, 1 meter on the map = 24,000 meters on the ground, etc.). This absolute scale can be converted to a *"relative scale"* if you prefer to think of scale in different measurement units. Again, 1:24,000 is a ratio, so



1 inch / 24,000 inches x 12 inches / 1 foot or 1 inch = 2000 feet
1 inch / 12,000 inches x 12 inches / 1 foot or 1 inch = 1000 feet

2) To zoom to a particular scale, just type in the desired absolute scale, and click the **Go!** button to its right. If you have a relative scale, you will have to first convert to an absolute scale. For example, if you wanted the map scale to be 1" = 6,000', then you would type *72000* into the **Set Scale** box before clicking the **Go!** button.

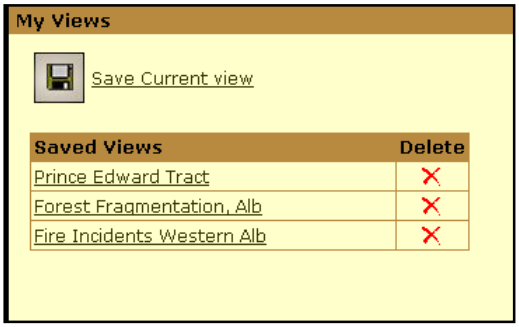
Locator Map

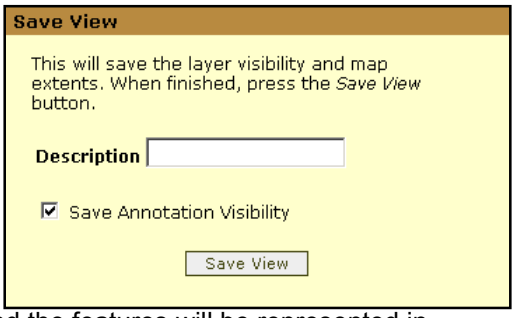
ForestRIM displays a "locator map" at the bottom of the ForestRIM screen in order to show the Map Window location relative to the entire state, or relative to a more localized area. Toggle between **State** and **Local** to see the difference. Note that sometimes you will be zoomed in to such a small area that you will no longer be able to make out the red location extent box on the Locator Map.

Saving Map Views

ForestRIM has a Tab Window set aside for you to save your Map View. In other words, once you have chosen various layers to display in your map, and/or you have added any desired annotation, you can save that map view and come back to it later. ForestRIM remembers the zoom extent of your map, and any of the layers/annotations that you had visible at the time you saved the map view.

Saving a Map View





1) Create a map to save by choosing some layers and optionally adding annotation.

2) Click on the **Views** Tab from the ForestRIM Tab Window at the right.

3) Click **Save Current View**.

4) The Tab Window will prompt you to give a name to the Map View you intend to save. Type this name into the **Description** box. Also, you have the option of saving the annotations visible at the time you choose to save the map view. Uncheck the **Save Annotation Visibility** box if you do not want annotations saved as part of that Map View.

5) **CAUTION**: you might have annotations 'visible' (i.e. "on") that are outside the zoom extent of the map you are about to save. These other annotations will be saved if the Save Annotation Visibility box is checked, and the features will be represented in the legend of any exported maps you might make. You may want to go into the Edit Tool and "turn off" all of the annotations not relevant to this map before saving the Map View.

6) Click the **Save View** button

7) The Saved Views box shows a list of all saved views. To delete this (or any) Map View, simply click on the red X icon under the **Delete** heading.

8) To return to a saved map view, click on its name in the **Saved Views** box.

Search Map Features

ForestRIM allows you to learn more about features within *queryable* layers by searching at a point, along a line, or within an area you define. A queryable layer is one where the map features (like roads) have associated information stored in a table (like road name). A separate window will display the items found in the map and allow you to view the detailed data (from the table) for each item, meanwhile the found items will be highlighted in the map window. You will also be able to zoom in on a single item, or zoom to all found items.

You can even use the results of your spatial search to perform another, secondary, spatial search. The geographic area defined by your initial search results can be used to find items in another layer, or you can buffer your initial search and find items in another layer within that buffer.

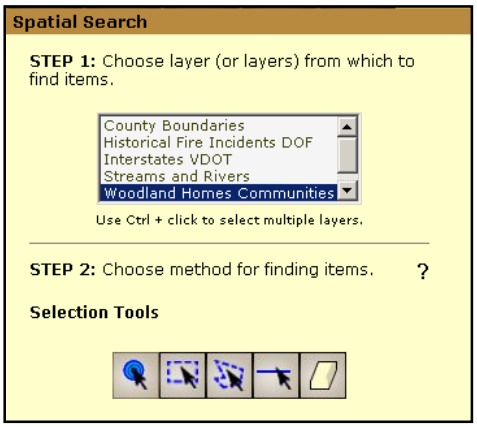
Performing a Search

15) Click the **Search** tab in the ForestRIM window on the right.

16) Follow the instructions that appear in the box below the tab, shown at left.

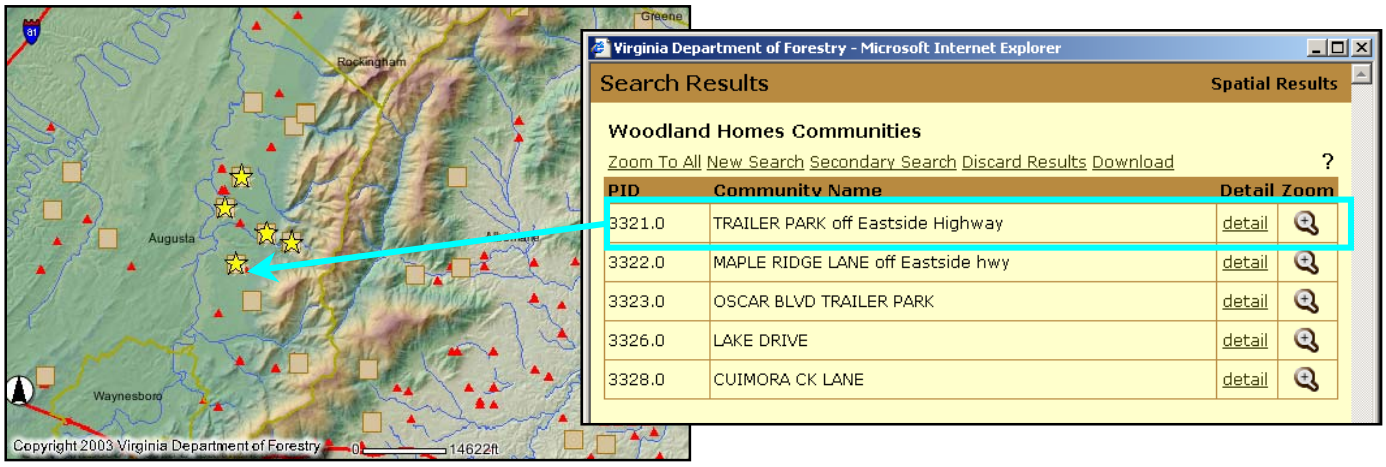
17) In **Step 1**, you will select one layer from the layers list by clicking on its name. (Use CNTRL + click to select multiple layers).

18) In **Step 2**, you will choose a tool to find items. You have four methods available: point, box, polygon, or line. As you float your mouse over each icon, it will tell you what tool you are looking at.

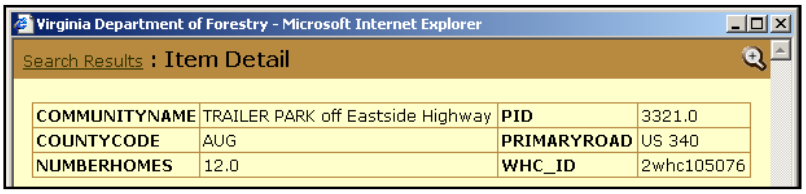


19) Once you choose a tool, go into the map window and click a point, or draw a line, box, or polygon depending on your tool choice.

20) The features that ForestRIM finds will be highlighted in the map window, and a pop-up window will display the data associated with each item or items found. (See figures.)

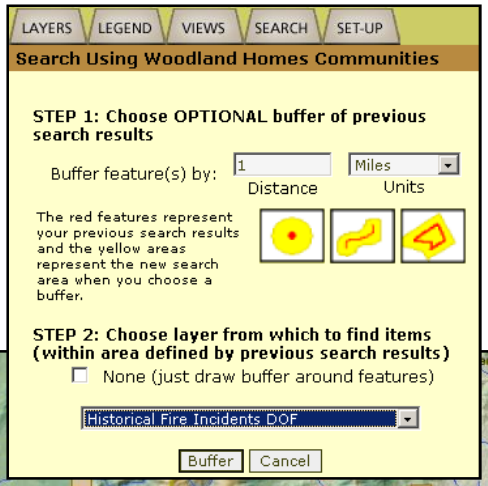


21) You can get all of the associated detail information for each record by clicking on **detail**, or zoom to the record by clicking on the magnifying glass associated with the record you want to see. To return to the full list, click "Search Results" at the top left part of the pop-up window.



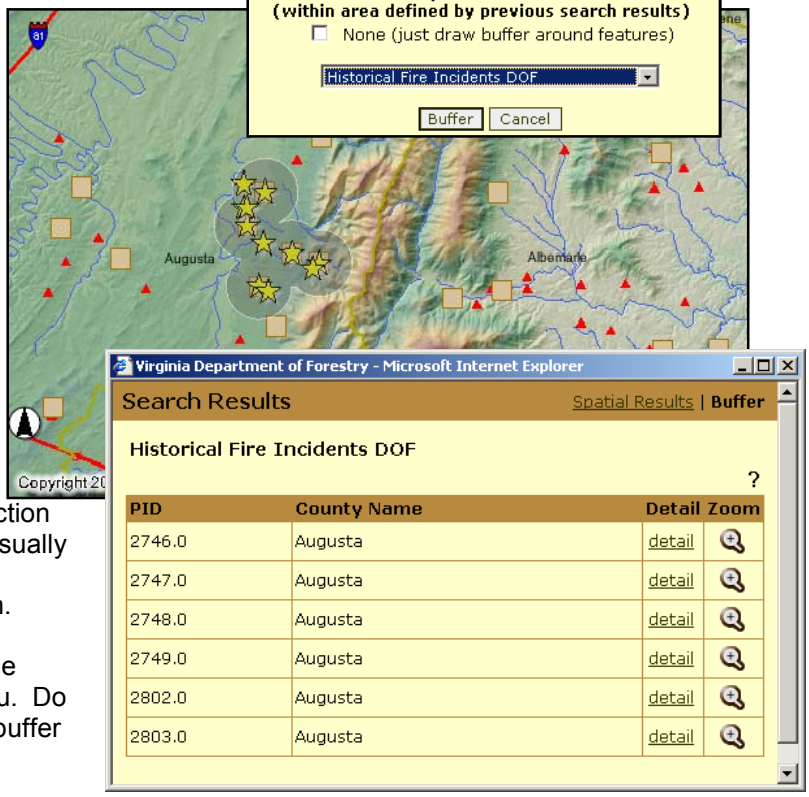
22) To zoom to the extent of all found items within a layer, click **Zoom to All** just under the layer header. To begin a new search, click **New Search** under the layer header. To delete these search results, click **Discard Results**.

23) To download the tabular results to a comma-delimited file (which you can bring into a spreadsheet program for analysis), click **Download**. A pop-up window will prompt you to save the file to your computer. Follow the instructions and save the file in the desired location.



24) To use the geographic extent of your search result for *another search*, click on **Secondary Search** just under the layer header.

25) Once you click on **Secondary Search**, the Tab Window in ForestRIM will display instructions for searching in the area based on your initial search results, or by a buffer of those results. You will be prompted to choose a distance to buffer your previously selected features, but can leave it as 0 if you want to use the exact geographic extent of the initial search results. If you choose a distance greater than 0, this function will create a buffer, either for you to use visually on the map or to increase the search area around the vicinity of your previous search.



26) For **Step 1**, enter a distance, and enter the units of distance from the drop-down menu. Do not enter a distance if you do not want to buffer the previous search extent.

27) **Step 2** asks you to choose a layer from which to find items. If you only want the selected features buffered on the map and do not need to search further, click the **None** box in Step 2, and click **Buffer**.

28) If you want to use the buffer area to search for items in another later, choose the layer from the drop-down box and click **Buffer**. Alternatively click **Cancel**.

29) A search results box appears showing you what ForestRIM found within your search buffer.